

Ohio EPA Memorandum

To: Karen Cibulskis, U.S. EPA, Region 5

From: Matt Justice, Ohio EPA, DERR/SWDO

RE: S. Dayton Dump, PRP's Revised Geophysical Workplan of April 22, 2008

Date: April 25, 2008

In response to your email of April 23, I could find nothing technically "wrong" with the revised geophysical letter workplan. If implemented correctly, the magnetometer, EM-31, and EM-61 surveys will provide useful data. On the other hand, the usefulness of the proposed ground penetrating radar (GPR) survey will be limited. I am providing you comments on the proposed GPR survey as follows:

1. Please note the strengths and limitations of the ground penetrating radar (GPR) survey. GPR is often limited in landfill situations by the heterogeneity of landfill contents. Uneven terrain poses another challenge. Not only does the history of South Dayton Dump indicate heterogeneity, but the majority of the site is overgrown and characterized by uneven terrain. Uneven terrain is a concern because it reduces ground contact, resulting in poor signal penetration. Please clarify why page 3 states that "minor amounts of brush and tree cutting will be required." Have areas planned for GPR scanning on figure 3 been field verified for access?
2. Page 9 states that geophysical and bathymetry reports will be forwarded to the agencies, but specifics regarding reporting are not provided. Please note that the agencies expect the GPR report to include discussions of methodology, data processing, and interpretation. Specific components expected in the discussions are as follows:
 - Justification of antenna frequency
 - Discussion of software and removal of noise (subtracting the avg. trace).
 - Justification of applied gain functions
 - Selection of time frames chosen for signal amplification
 - Justification of soil velocities used in calculating primary wavelength and theoretical minimum vertical resolution
 - Calculation of the signal wavelength and theoretical minimum vertical resolution of each interpreted trace. For example, a signal with a 100 MHz frequency traveling through soil with a presumed soil velocity of 0.06 m/ns (wet clay), would have a primary wavelength of 60 cm. The resulting theoretical resolution would then be 15 cm (one quarter of the wavelength).
 - Discussion of whether the scanned media is expected to contain objects with dimensions corresponding to the signal wavelength
 - Discussion of whether suspected debris has created scatter or interference
 - Potential attenuation from fluids
 - Depth calculation of any interpreted reflectors (depth = soil velocity x one way travel time)
 - Inclusion of radargrams for all scanned traces.
3. Page 7 states that "CRA does not intend to discuss the preliminary results with USEPA and Ohio EPA before starting 20-foot grids." Please provide the agencies opportunity to review radargrams from the 40 foot scans, before any decision is made on whether to exclude scanning along a tighter 20 foot grid.